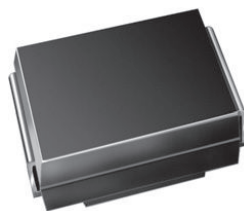


## Surface-Mount Glass Passivated Rectifier


**SMB (DO-214AA)**

Cathode  Anode

### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
$V_{RRM}$	400 V, 600 V, 800 V, 1000 V
$I_{FSM}$	35 A
$I_R$	1.0 $\mu$ A
$V_F$ at $I_F = 1.0$ A	0.88 V
$T_J$ max.	150 °C
Package	SMB (DO-214AA)
Circuit configuration	Single

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, medical, and telecommunication.

### MECHANICAL DATA

**Case:** SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

Base P/N-E3 - RoHS compliant, commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test

**Polarity:** color band denotes the cathode end

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)						
PARAMETER	SYMBOL	S1BG	S1BJ	S1BK	S1BM	UNIT
Device marking code		1BG	1BJ	1BK	1BM	
Maximum repetitive peak reverse voltage	$V_{RRM}$	400	600	800	1000	V
Maximum RMS voltage	$V_{RMS}$	280	420	560	700	V
Maximum DC forward current (fig. 1)	$I_F^{(1)}$	1.0				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	35				A
Operating and storage temperature range	$T_J^{(2)}$ , $T_{STG}$	-55 to +150				°C

### Notes

<sup>(1)</sup> Free air mounted on recommended copper pad area

<sup>(2)</sup> The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 0.5 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.92	-	V
	I <sub>F</sub> = 1.0 A			0.98	1.1	
	I <sub>F</sub> = 0.5 A	T <sub>J</sub> = 125 °C		0.8	-	
	I <sub>F</sub> = 1.0 A			0.88	1.05	
Reverse current	Rated V <sub>R</sub>	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	0.07	1.0	μA
		T <sub>J</sub> = 125 °C		21	200	
Typical reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	1.8	-	μs
Typical junction capacitance	Rated V <sub>R</sub> = 4.0 V, 1 MHz		C <sub>J</sub>	8.2	-	pF

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width,  $\leq 40\text{ ms}$ 

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	S1BG	S1BJ	S1BK	S1BM	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)(2)</sup>	107				°C/W
	R <sub>θJM</sub> <sup>(3)</sup>	7.2				

**Notes**(1) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ 

(2) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz. standard footprint

(3) Thermal resistance junction-to-mount to follow JEDEC® 51-14, transient dual interface test method (TDIM)

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
S1BJ-M3/I	0.096	I	3200	13" diameter plastic tape and reel
S1BJ-E3/I	0.096	I	3200	13" diameter plastic tape and reel



## RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

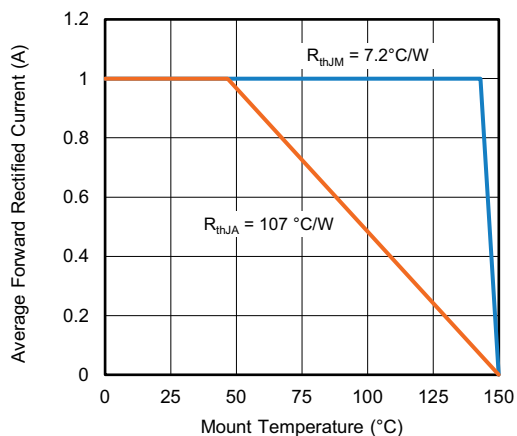


Fig. 1 - Maximum Forward Current Derating Curve

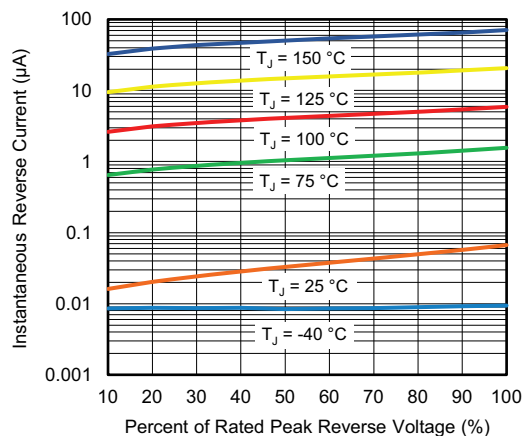


Fig. 4 - Typical Reverse Characteristics

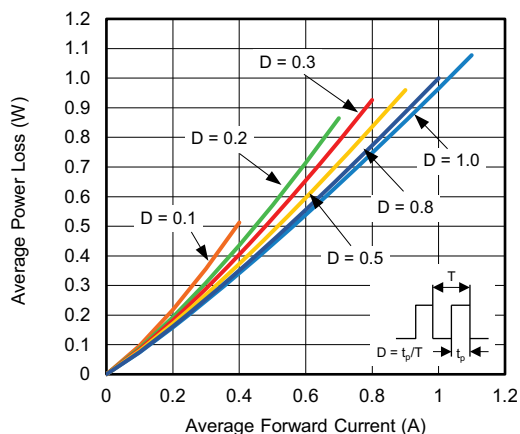


Fig. 2 - Forward Power Loss Characteristics

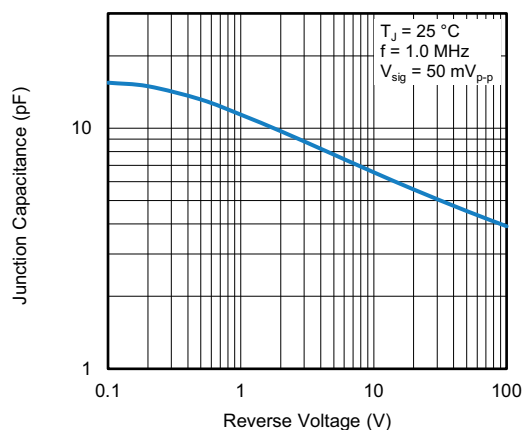


Fig. 5 - Typical Junction Capacitance

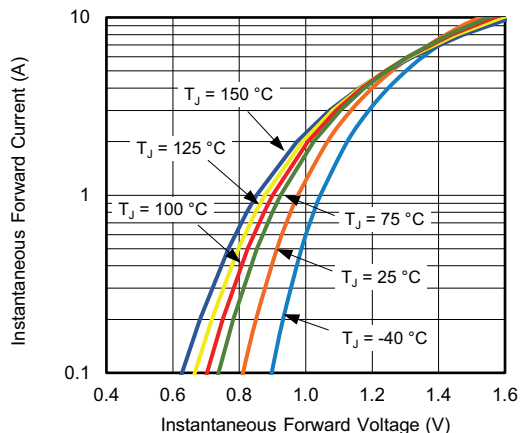


Fig. 3 - Typical Instantaneous Forward Characteristics

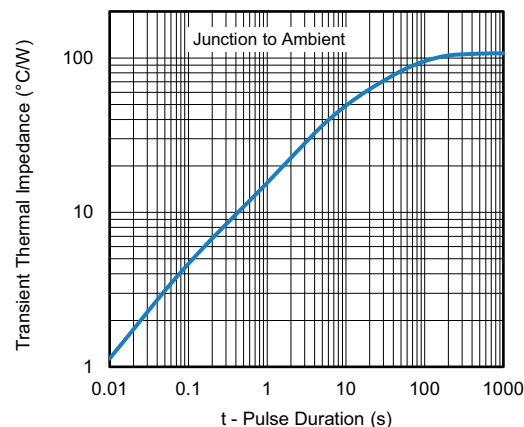
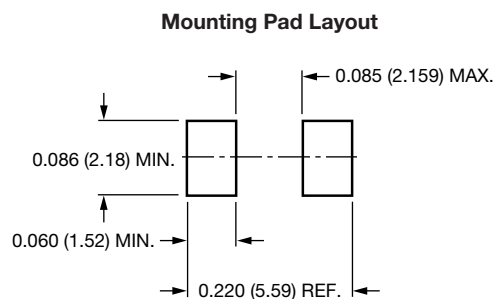
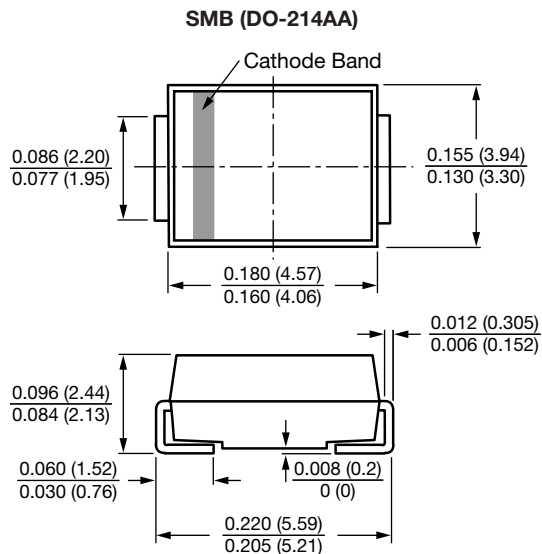


Fig. 6 - Typical Transient Thermal Impedance



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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